

CPSC 322, Practice Exercise

Branch and Bound

1 Directed Questions

- In branch and bound (B&B), how is the upper bound (UB) calculated?
- How is the lower bound (LB) calculated for a path?
- With B&B, when do we prune a path?

2 Heuristic Search

Consider the search problem represented in Figure 1, where a is the start node and there are goal nodes at f and j . For each node, the heuristic cost is indicated on the node, and for each arc, the arc cost is indicated along the arc. Neighbors are ordered according to the f function.

What is the UB when only the start node has been explored? Which goal node is found first by B&B? What is the UB immediately after the first goal node is found? Is the second goal found by B&B?

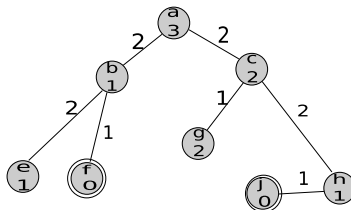


Figure 1: Branch and Bound with Two Goals

3 Learning Goals

You can:

- Define/read/write/trace/debug different search algorithms
- Implement pruning